SINGLE SPEED TURBINE GENERATOR FOR DIFFERENT POWER SYSTEM OUTPUT FREQUENCIES IN POWER GENERATION SYSTEMS AND ASSOCIATED METHODS

Abstract Of The Disclosure

A power generation system **(10)** and associated methods to compensate for different power system output frequencies are provided. The system **(10)** preferably includes a turbine **(12)** having a turbine rotor **(13)** positioned to rotate at a preselected rotational frequency and a generator **(20)** positioned to generate a power system output current at a preselected power system frequency. The generator **(20)** preferably has a generator stator **(22)** and a generator rotor **(25)** positioned within the generator stator **(22)** to induce electromotive force to the generator stator **(22)**. The generator rotor **(25)** preferably is coupled to the turbine rotor **(13)** and driven by the turbine rotor at substantially the same preselected rotational frequency. The system **(10)** also preferably includes a frequency differentiator **(30)** coupled to the generator rotor **(25)** and connected to the power system electrical current output to differentiate between the preselected power system output frequency and the preselected rotational frequency of the generator rotor **(25)** so that variations in the preselected power system output frequency appear as variations in the generator rotor alternating electrical current frequency.